

Mineral Industry Surveys

For information, contact:

Peter H. Kuck, Nickel Commodity Specialist
U.S. Geological Survey
989 National Center
Reston, VA 20192
Telephone: (703) 648-4965, Fax: (703) 648-7757
E-mail: pkuck@usgs.gov

Barbara J. McNair (Data)
Telephone: (703) 648-7952
Fax: (703) 648-7975
E-mail: bmcnair@usgs.gov

Internet: <http://minerals.usgs.gov/minerals>

NICKEL IN FEBRUARY 2004

In February, reported domestic consumption, on a daily average basis, was 18% greater than that of January, according to the U.S. Geological Survey. Average daily nickel consumption of cathode, pellets, briquets, and ferronickel for stainless steel was 68.6 metric tons per day (t/d)—19% greater than the 57.6 t/d for January 2004 and 5% greater than the 65.3 t/d (revised) for February 2003. Consumption of elemental nickel to make superalloys (like INCONEL 718 and WASPALOY) increased by 9% from January levels, on a daily average basis. Consumption to make corrosion-resistant, less stressable nickel-base alloys (like INCONEL 600 and Nickel 200) rose by 10%. Sales to plating companies averaged 27.1 t/d, about 2% more than the January sales figure of 26.5 t/d.

On February 29, U.S. consumer stocks of cathode, pellets, briquets, and powder totaled 1,460 metric tons (t)—20% more than the 1,220 t on January 31, and 9% more than the 1,340 t reported for yearend 2003. Stocks in London Metal Exchange (LME) warehouses worldwide totaled 13,370 t on February 29—13% less than the 15,384 t on January 31. Data collected by the International Nickel Study Group indicated that, at the end of January, world nickel producers (excluding those in Austria, China, The Former Yugoslav Republic of Macedonia, Serbia, and the Ural area of Russia) had 96,800 t of nickel in primary products in stock, of which 66,800 t, or 69%, was Class I material (electrolytic cathode, pellets, briquets, rondelles, powder, etc.). The other 31% was Class II materials (ferronickel, oxide sinter, and East Asian utility nickel—products with a nickel content of less than 99%).

The United States imported 9,700 t of primary nickel in January, 24% more than the 7,840 t for December 2003. Class I materials accounted for 84% of total primary nickel imports received during January. Trade data for February will appear in a subsequent report.

Update

Canada—Voisey's Bay nickel-copper-cobalt project.—On October 7, 2002, Inco Limited and the Provincial Government of Newfoundland and Labrador executed a series of agreements covering the development of the Voisey's Bay nickel-copper-

cobalt project. The agreements had several key provisions, including:

1. development of the Voisey's Bay nickel deposit near Nain in northeastern Labrador,
2. construction of a mill/concentrator at the mine site,
3. startup of a research and development program that would focus on hydrometallurgical processing technology,
4. construction of a hydrometallurgical demonstration plant at Argentia, Newfoundland, for evaluating the commercial feasibility of the new technology, and
5. settlement of land claims with aboriginal groups in northeastern Labrador.

Since 2002, Inco and its subsidiary, Voisey's Bay Nickel Company Ltd., have passed several milestones in the first phase of the three-phase project. Inco does not expect to complete the entire project before 2018 (Hand and Jones, 2004).

Construction at the Voisey's Bay mine site.—In March 2003, SNC Lavalin completed a bankable feasibility study of the mine, concentrator and related facilities. After reviewing the favorable study, Inco began infrastructure work 4 months later, in July. Construction of the open pit mine and 6,000-t/d concentrator is expected to cost between \$528 million and \$582 million. The concentrator is scheduled to be operational by early 2006. The port was 15% complete at yearend 2003 and should be finished by late 2005. At that point in time, the operators will have stripped sufficient overburden to begin mining, and the concentrator should be finished.

Status of the Argentia demonstration plant.—Environmental baseline studies are now underway at the proposed site of the Argentia demonstration plant on the island of Newfoundland. A 1:10,000-scale mini-pilot plant has been constructed at Inco's research facilities at Mississauga, Ontario, to test variations of the proposed hydrometallurgical process. About 65 employees work at the mini-pilot plant. If all goes well—the pilot plant is now on its fifth campaign—construction of the Argentia demonstration plant could begin this fall.

Reference Cited

Hand, Scott, and Jones, Peter, 2004, Remarks: Inco Limited Annual Meeting of Shareholders, Toronto, Ontario, Canada, April 21, 2004, 12 p.

TABLE 1
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE¹

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
2003:					
February	4,410	390	23	4,820	10,200
March	4,350	653	29	5,030	15,300
April	4,790	400	46	5,230	20,500
May	4,330	524	25	4,870	25,400
June	4,050	498	43	4,590	30,000
July	4,070	900	25	5,000	35,000
August	4,250	873	28	5,150	40,100
September	4,140	844	29	5,020	45,100
October	4,670	911	33	5,620	50,800
November	4,420	1,190	30	5,640	56,400
December	4,090	902	30	5,020	61,400
January-December	52,400	8,620	416	61,400	XX
2004:					
January	4,130	595	34	4,760	4,760
February:					
Steel:					
Stainless and heat resisting	1,540	446	W	1,990	3,800
Alloy (excludes stainless)	W	--	--	--	W
Superalloys	785	--	W	785	1,570
Copper-nickel alloys	W	--	--	--	W
Electric, magnetic, and expansion alloys	10	--	--	10	19
Other nickel & nickel alloys	W	--	W	W	W
Cast iron	W	--	--	W	W
Electroplating (sales to platers)	786	--	--	786	1,610
Chemical and chemical uses	W	--	--	W	W
Other uses	1,630	--	26	1,660	2,990
Total reported	4,760 ²	446	26	5,230	9,990
Total all companies (calc) ³	XX	XX	XX	8,040	15,400
2004: January-February	8,890	1,040	62	9,990	XX
2003: January-February	9,230	919	98	10,200	XX

W Withheld to avoid disclosing company proprietary data; included in "Other uses" category. XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Of consumption, 3,690 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

³Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (65.01%) to apparent primary consumption for 2001.

TABLE 2
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS, BY FORM AND USE ^{1,2}

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total
2003:				
February	1,430	54	35	1,520
March	1,230	148	48	1,430
April	1,440	50	48	1,540
May	1,430	58	42	1,530
June	1,810	102	73	1,990
July	1,520	91	57	1,670
August	1,700	140	51	1,890
September	1,250	99	52	1,400
October	1,310	109	60	1,480
November	1,310	227	59	1,600
December	1,340	260	46	1,650
2004:				
January	1,220	186	55	1,460
February:				
Steel (stainless, heat resisting and alloy)	397	(3)	(3)	397
Nonferrous alloys ⁴	1,040	(3)	(3)	1,040
Foundry (cast irons)	(3)	--	--	(3)
Chemical (catalysts, ceramics, plating salt, etc.) and unspecified uses	24	112	46	182
Total	1,460	112	46	1,620

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Stocks held by companies that consume nickel in more than one end-use category are credited to the major category. Stocks are subject to revisions owing to inventory adjustments.

³Included in the "Chemical and unspecified uses" category.

⁴Includes superalloys, nickel-copper and copper-nickel alloys, permanent magnet alloys, and other nickel alloys.

TABLE 3
CONSUMPTION AND ENDING STOCKS OF PURCHASED SECONDARY NICKEL, BY USE¹

(Metric tons, nickel content)

Period	Consumption			Stocks		
	Ferrous scrap ²	Nonferrous scrap ³	Total scrap	Ferrous scrap ²	Nonferrous scrap ³	Total scrap
2003:						
February	4,030	758	4,790	3,080	96	3,180
March	6,420	649	7,070	2,930	105	3,040
April	5,310	674	5,980	3,210	93	3,310
May	4,920	773	5,690	3,150	102	3,250
June	4,030	645	4,680	3,100	109	3,210
July	4,340	682	5,020	3,370	105	3,480
August	4,770	755	5,530	3,310	115	3,430
September	3,810	739	4,540	3,290	108	3,400
October	5,350	763	6,110	3,110	101	3,210
November	4,960	674	5,630	2,950	97	3,050
December	4,930	653	5,590	2,810	85	2,900
January-December	57,600	8,410	66,000	XX	XX	XX
2004:						
January	5,050	675	5,730	2,700	81	2,780
February	4,780	691	5,470	2,710	80	2,790
January-February	9,830	1,370	11,200	XX	XX	XX

XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Nickel content is calculated from an average nickel content and the reported gross weight of scrap.

³Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY¹

(Metric tons, nickel content)²

Period and country of origin	Cathodes pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total ³	Total year to date ⁴	Wrought nickel
2003:										
January	5,950	928	605	10	341	322	223	8,380	8,380	55
February	7,060	954	916	8	323	424	269	9,960	18,300	115
March	17,400	1,130	1,310	34	420	476	309	21,100	39,400	93
April	7,770	678	1,700	--	496	533	321	11,500	50,900	64
May	6,160	933	1,530	7	412	461	378	9,880	60,800	37
June	10,800	368	692	(5)	226	408	327	12,800	73,600	41
July	6,240	294	1,840	11	352	420	312	9,470	83,000	49
August	7,420	762	913	(5)	477	475	544	10,600	93,600	62
September	9,990	1,030	1,180	(5)	570	744	248	13,800	107,000	48
October	7,270	565	1,010	20	326	715	255	10,200	118,000	34
November	7,030	625	932	--	318	889	324	10,100	128,000	28
December	6,230	860	471	(5)	530	821	284	9,190	137,000	34
January-December	99,300	9,130	13,100	90	4,790	6,690	3,790	137,000	XX	660
2004:										
January:										
Australia	520	160	--	--	3	--	--	683	683	--
Brazil	440	--	--	--	16	23	--	479	479	--
Canada	5,180	420	--	40	130	666	11	6,440	6,440	1
Colombia	--	--	258	--	--	2	--	260	260	--
Dominican Republic	--	--	778	--	--	1	--	779	779	--
Finland	485	41	--	--	--	--	184	710	710	--
France	82	--	--	--	61	--	67	210	210	1
Germany	(5)	24	--	--	48	(5)	24	96	96	38
Japan	--	16	--	--	21	--	80	117	117	14
Mexico	(5)	--	--	--	3	206	2	211	211	--
New Caledonia	--	--	--	--	--	--	--	--	--	--
Norway	--	--	--	--	8	--	--	8	8	--
Russia	286	71	--	--	--	--	--	357	357	--
South Africa	--	20	--	--	--	--	--	20	20	--
Sweden	--	3	--	--	--	--	--	3	3	--
United Kingdom	106	63	--	--	158	--	7	334	334	(5)
Venezuela	--	--	--	--	8	8	--	16	16	--
Zimbabwe	261	--	--	--	--	--	--	261	261	--
Other	1	11	--	--	33	27	60	133	133	23
Total	7,360	829	1,040	40	489	933	435	11,100	11,100	77

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemicals category includes chlorides (25%); sulfates (22%); other salts (22%); supported catalysts (22%); and oxide, sesquioxide, and hydroxide (65%).

³Excludes wrought nickel.

⁴May include revisions for prior months.

⁵Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 5
U.S. EXPORTS OF NICKEL, BY COUNTRY¹

(Metric tons, nickel content)²

Period and country of destination	Cathodes pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total ³	Total year to date	Wrought nickel
2003:										
January	91	58	10	11	853	3,060	267	4,350	4,350	586
February	24	84	13	7	948	5,050	261	6,380	10,700	462
March	46	113	5	13	770	5,150	243	6,340	17,100	629
April	78	86	8	19	894	2,880	466	4,430	21,500	149
May	30	59	11	11	836	2,380	379	3,710	25,200	147
June	90	47	29	33	516	2,310	276	3,300	28,500	143
July	87	95	27	2	510	3,570	393	4,690	33,200	148
August	56	77	37	1	792	3,040	301	4,300	37,500	162
September	107	106	18	51	707	2,350	223	3,560	41,100	148
October	133	153	12	4	1,010	3,270	276	4,850	45,900	141
November	210	127	1	5	819	1,600	371	3,130	49,000	102
December	44	92	10	4	809	3,190	441	4,590	53,600	72
January-December	996	1,100	181	161	9,460	37,800	3,900	53,600	XX	2,890
2004:										
January:										
Australia	--	(4)	--	--	--	--	(4)	(4)	(4)	1
Belgium	--	1	--	5	17	20	1	44	44	--
Canada	--	16	5	--	524	198	233	976	976	8
China	--	--	--	--	--	376	14	390	390	(4)
Finland	--	--	--	--	--	450	--	450	450	--
Germany	--	8	--	(4)	9	--	2	19	19	(4)
India	--	--	--	--	--	68	26	94	94	(4)
Italy	--	1	--	--	--	(4)	6	8	8	2
Japan	2	7	(4)	--	10	53	11	83	83	6
Korea, Republic of	--	5	--	--	--	775	37	817	817	3
Mexico	46	4	--	--	--	--	8	58	58	61
Netherlands	--	(4)	--	--	--	69	5	74	74	(4)
South Africa	--	--	--	--	6	--	4	10	10	--
Spain	--	--	--	--	--	--	--	--	--	--
Sweden	--	--	--	--	33	--	--	33	33	1
Taiwan	--	6	--	--	10	251	(4)	267	267	(4)
United Kingdom	--	14	10	--	31	2	1	58	58	12
Other	4	67	--	--	17	108	51	248	248	59
Total	52	129	15	5	657	2,370	399	3,630	3,630	153

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemicals category includes chlorides (25%); sulfates (22%); other salts (22%); supported catalysts (22%); and oxide, sesquioxide, and hydroxide (65%).

³Excludes wrought nickel.

⁴Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY¹

(Metric tons, gross weight)

Period and country of origin	Unwrought alloyed ingot	Bars, rods and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date
2003:									
January	54	252	427	332	(2)	133	91	1,290	1,290
February	167	158	356	264	11	93	140	1,190	2,480
March	129	209	600	308	(2)	148	163	1,560	4,040
April	184	245	697	316	6	204	266	1,920	5,950
May	181	204	504	328	7	206	195	1,630	7,580
June	150	156	579	244	35	292	102	1,560	9,140
July	130	266	554	277	30	305	168	1,730	10,900
August	151	78	469	319	32	322	154	1,530	12,400
September	48	239	406	211	10	115	95	1,120	13,500
October	204	307	443	305	15	162	95	1,530	15,000
November	195	239	331	210	23	89	156	1,240	16,300
December	314	169	388	215	45	704	147	1,980	18,300
January-December	1,910	2,520	5,750	3,330	214	2,770	1,770	18,300	XX
2004:									
January:									
Australia	36	--	--	1	--	--	(2)	37	37
Belgium	1	--	(2)	--	--	--	(2)	1	1
Canada	--	--	1	--	--	15	4	20	20
China	--	--	1	(2)	--	--	34	35	35
France	--	(2)	43	1	--	8	2	54	54
Germany	(2)	79	72	65	14	39	1	270	270
Italy	--	89	2	--	--	(2)	3	94	94
Japan	--	--	2	--	--	7	2	11	11
Mexico	--	--	--	--	--	--	54	54	54
Netherlands	--	--	--	--	--	--	11	11	11
South Africa	49	--	--	--	--	--	--	49	49
Sweden	--	44	162	6	--	62	(2)	274	274
United Kingdom	16	63	3	103	--	2	(2)	187	187
Other	--	3	1	17	--	1	22	43	43
Total	102	278	286	193	14	134	133	1,140	1,140

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 7
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY¹

(Metric tons, gross weight)

Period and country of destination	Unwrought alloyed ingot	Bars, rods and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date
2003:									
January	729	375	138	236	12	231	192	1,910	1,910
February	1,160	419	93	215	38	168	374	2,460 ^r	4,380
March	226	615	113	399	214	150	307	2,020	6,400
April	600	743	158	315	14	182	292	2,300	8,700
May	857	950	82	295	44	184	256	2,670	11,400
June	180	980	94	521	21	163	280	2,240	13,600
July	750	553	72	223	25	263	216	2,100	15,700
August	708	707	112	344	30	228	201	2,330	18,000
September	597	623	80	281	52	140	271	2,040	20,100
October	206	802	55	396	55	255	253	2,020	22,100
November	274	621	121	382	49	254	208	1,910	24,000
December	379	571	69	350	107	203	199	1,880	25,900
January-December	6,660	7,960	1,190	3,960	661 ^r	2,420	3,050	25,900	XX
2004:									
January:									
Australia	--	18	17	(2)	--	1	2	38	38
Belgium	67	56	1	56	--	(2)	1	181	181
Canada	4	60	27	40	2	32	37	202	202
France	254	82	1	39	(2)	(2)	3	379	379
Germany	8	27	11	13	5	1	3	68	68
India	(2)	--	--	1	--	1	--	2	2
Ireland	(2)	--	(2)	3	--	--	1	4	4
Italy	104	32	(2)	9	(2)	(2)	1	146	146
Japan	44	19	3	29	(2)	6	(2)	101	101
Korea, Republic of	(2)	12	1	56	(2)	2	2	73	73
Mexico	1	16	78	10	(2)	45	82	232	232
Netherlands	(2)	8	(2)	1	--	3	20	32	32
Singapore	(2)	14	1	6	--	1	2	24	24
Spain	11	1	--	(2)	--	1	1	14	14
Sweden	2	(2)	1	10	--	--	1	14	14
Switzerland	1	(2)	2	7	(2)	3	(2)	13	13
Taiwan	1	(2)	(2)	2	--	1	1	5	5
United Kingdom	24	269	3	50	(2)	4	10	360	360
Other	1	117	9	34	2	17	64	244	244
Total	522	731	155	366	9	118	231	2,130	2,130

^rRevised. XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 8
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
February 2004:		
Stainless and heat resisting steels	61	39
Alloy steels	98	2
Superalloys	87	13
Copper-nickel alloys	98	2
Other nickel-base alloys	100	(1)

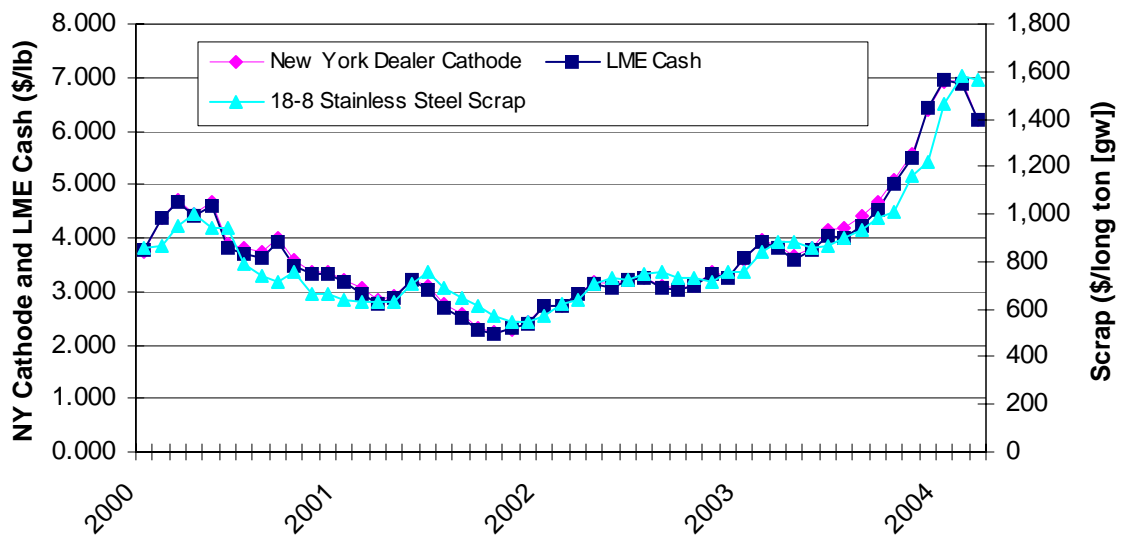
¹Less than 1/2 unit.

TABLE 9
NICKEL PRICES

Date	Platts Metals Week				American Metal Market, 18/8 Stainless steel scrap Pittsburgh
	Cathode NY Dealer	LME Cash mean ¹	LME Cash mean ¹	18/8 Stainless steel scrap Free market	18/8 Stainless steel scrap Pittsburgh
	\$/lb.	\$/t	\$/lb.	\$/long ton (gw)	\$/long ton (gw)
2003:					
Average for month of:					
March	3.865	8,378.810	3.801	886	885
April	3.655	7,910.125	3.588	885	885
May	3.826	8,330.625	3.779	839	861
June	4.155	8,874.762	4.026	874	867
July	4.178	8,797.391	3.990	893	897
August	4.418	9,351.375	4.242	918	935
September	4.668	9,965.341	4.520	978	985
October	5.066	11,047.174	5.011	1,041	1,013
November	5.568	12,086.500	5.482	1,153	1,160
December	6.390	14,162.500	6.424	1,262	1,222
Yearly average	4.446	9,629.469	4.368	961	942
2004:					
Average for week ending:					
January 2	7.01-7.78	16,625.000	7.541	1,250-1,300	1,225-1,250
January 9	7.22-8.28	16,451.000	7.462	1,525-1,585	1,450-1,475
January 16	6.65-7.66	14,859.500	6.740	1,475-1,550	1,450-1,475
January 23	6.85-7.02	14,844.500	6.733	1,475-1,550	1,450-1,475
January 30	6.88-7.00	14,879.500	6.749	1,475-1,550	1,450-1,475
February 6	7.01-7.33	15,179.000	6.885	1,500-1,550	1,575-1,595
February 13	7.09-7.33	15,453.500	7.010	1,570-1,590	1,575-1,595
February 20	7.21-7.42	15,525.000	7.042	1,500-1,550	1,575-1,595
February 27	6.56-7.13	14,423.000	6.542	1,500-1,535	1,575-1,595
March 5	6.39-7.02	14,116.000	6.403	1,475-1,525	1,550-1,575
March 12	6.10-6.31	13,119.500	5.951	1,475-1,525	1,550-1,575
March 19	5.78-6.67	13,408.000	6.082	1,400-1,450	1,550-1,575
March 26	6.54-6.74	14,097.500	6.395	1,385-1,425	1,550-1,575
Average for month of:					
January	6.900	15,326.548	6.952	1,517	1,463
February	6.968	15,145.125	6.870	1,537	1,585
March	6.203	13,715.000	6.221	1,458	1,563

¹Mean of the cash buyer price and the cash seller and settlement price.

2000-2004 AVERAGE MONTHLY PRICES (Derived from Metals Week and American Metal Market quotations)



2000-2004 STOCKS

